What is claimed is:

1. A process for transporting substrates between two regions having different pressures without substantially affecting the pressure of either region, the process comprising:

housing a first and second robot arm in a removable sub-chamber coupled to a loadlock chamber, wherein the first and second arms include a primary pivot axis within the sub-chamber;

reducing a pressure in the loadlock chamber to an operating pressure in an adjacent process chamber, wherein a closable port is disposed between the process chamber and the loadlock chamber;

rotating the first robot arm about the primary pivot axis for extending the first robot arm and an attached first end effector into the process chamber to retrieve a first substrate;

moving the first robot arm in the vertical or z-axis direction to lift the first substrate;

rotating the first robot arm about the primary pivot axis to retract the first robot arm and the attached end effector from the process chamber and move the end effector with the first substrate into the loadlock chamber;

rotating a second robot arm about the primary pivot axis for extending the second robot arm and an attached second end effector with a second substrate thereon into the process chamber at an atmospheric pressure;

rotating the second robot arm about the primary pivot axis to retract the attached second end effector from the process chamber into the loadlock chamber, rotating the first robot arm about the primary pivot axis to retract the attached first end

effector from the process chamber, wherein the operating pressure of the process chamber is maintained;

closing the port between the process chamber and the loadlock chamber; and

adjusting a pressure within the loadlock chamber to an ambient atmospheric pressure while maintaining the operating pressure within the process chamber.

2. The process according to Claim 1, wherein the first and second substrates have a substantially linear translation path between the process chamber and loadlock chamber.

3. The substrate transport method of Claim 1, wherein retreiving the first substrate from the process chamber further comprises placing the first substrate onto a temperature-controlled surface within the loadlock chamber.

4. The substrate transport method of Claim 1, wherein rotating the first robot arm about the primary pivot axis comprises engaging a cam follower link with a non-rotating cam, wherein the cam follower link is driven by a rocker arm for pivoting a first translating arm coupled to the first robot arm about a secondary pivot axis.

5. The substrate transport method of Claim 4, wherein the cam follower link maintains contact with the cam during rotation of the arm by means of a spring coupled to the rocker arm and a housing of the robot arm.

6. The substrate transport method of Claim 5, wherein the first cam follower link pivots away from mechanical contact with the cam upon elongating the spring.

7. The substrate transport method of Claim 1, wherein the first and second robot arms further includes first and second link arms, respectively, wherein the links arm rotate approximately 130 degrees about the primary pivot axis.

8. The substrate transport method of Claim 1, wherein first and second robot arms have a distal end attached to first and second translating arms and intermediate respective first and second end effectors, wherein the first and second translating arms rotate about 57 degrees as the first and second robot arms are rotated 130 degrees about the primary pivot axis.

9. A process for transporting substrates between two regions having different pressures without substantially affecting the pressure of either region, the process comprising:

housing a first and second robot arm in a removable sub-chamber coupled to a loadlock chamber, wherein the first and second arms include a primary pivot axis within the sub-chamber;

processing a first wafer in a process chamber at a predetermined operating pressure, wherein the process chamber is coupled to the loadlock chamber and includes a closable port therebetween;

removing a first substrate from the process chamber with the first robot arm and depositing a second unprocessed substrate into the process chamber with the second robot arm at an operating pressure of the process chamber;

closing the port and processing the second substrate in the process chamber at the operating pressure while simultaneously venting the loadlock chamber, receiving a third substrate from outside the loadlock chamber, and removing the first substrate to a position outside the loadlock chamber and process chamber;

reducing the pressure in the loadlock chamber to the operating pressure of the process chamber; and

opening the port and removing the second substrate from the process chamber with the first robot arm and depositing the third substrate into the process chamber with the second robot arm at the operating pressure of the process chamber.

10. The process according to Claim 9, wherein rotating the first robot arm about the primary pivot axis comprises engaging a cam follower link with a non-rotating cam, wherein the cam follower link is driven by a rocker arm for pivoting a first translating arm coupled to the first robot arm about a secondary pivot axis.

11. The process according to Claim 9, wherein the first and second robot arms rotate 130 degrees about the primary pivot axis.

12. The process according to Claim 9, wherein the first, second and third substrates have a substantially linear translation path between the process chamber, loadlock chamber, and the position outside the loadlock chamber and process chamber.

13. The process according to Claim 9, wherein the first and second robot arms each comprise a link arm assembly including an elongated housing having a first end and a second end, wherein the link arm comprises a cam disposed within the housing and a four bar link mechanism driven by the cam.

14. The process according to Claim 13, wherein the link arm rotates to engage the four bar link mechanism with the cam to pivotably move a translating arm about a secondary pivot axis, wherein the translating arm is attached to the link arm at one end and an end effector at an other end.

15. The process according to Claim 13, further comprising vacuum sealing the link arm assembly.

16. The process according to Claim 13, further comprising maintaining a pressure within the link arm assembly below the operating pressure of the process chamber.